

An Exploration of Cost Accounting for New Hope Group's Food Processing Business

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ABSTRACT

Cost accounting in food processing enterprises is a crucial link between production operations and strategic decision-making. This paper takes the development cycle of New Hope Group's food processing business from 2020 to 2023 as the research object, systematically reviewing its cost accounting methods, processes, and cost structure characteristics, and conducting a case study using "Meihao Crispy Pork," a blockbuster product with annual sales exceeding 1.3 billion yuan. The study finds that New Hope's food processing business still has room for improvement in areas such as accounting accuracy, management mechanisms, informatization level, and divisional information disclosure. To address these issues, this paper proposes optimization suggestions from three dimensions: diversification of accounting methods, improvement of budget responsibility mechanisms, and digital transformation, aiming to provide a reference for cost management practices in similar food processing enterprises.

Keywords: New Hope Group; food processing; cost accounting; activity-based costing; Meihao Crispy Pork

1. INTRODUCTION

1.1 Research Background and Significance

The food industry is an important pillar of China's national economy. According to the China National Light Industry Council, in 2024, the operating income of food industry enterprises above designated size in China exceeded 9 trillion yuan, and the total profit reached 643.17 billion yuan, an increase of 5.2% year-on-year ^[1]. In this huge industrial landscape, the sub-sectors such as agricultural and sideline food processing, deep processing of meat products, and pre-cooked dishes are undergoing a profound transformation from scale expansion to high-quality development. At the same time, the sharp fluctuations in raw material prices, the continuous improvement of consumers' requirements for food safety and quality, and the increasingly fierce competition in the industry have all pushed the traditional issue of cost accounting to the spotlight of enterprise management. A scientific, precise cost accounting system that is deeply matched with the characteristics of the business is no longer "the business of the accounting department", but a strategic resource that concerns the life and death of enterprises.

As a private enterprise founded by Mr. Liu Yonghao in 1982, New Hope Group has grown into one of the largest comprehensive suppliers of meat, eggs and milk in China after more than 40 years of accumulation. It has the world's largest feed production capacity and China's largest poultry processing capacity. The food processing department of the group is dominated by brands such as Meihua Food, Qianxihe and Jiahe Yipin. In 2022, the sales of food business exceeded 10 billion yuan for the first time. In 2023, the sales of meat processed products and pre-made dishes were 4.614 billion yuan. Among them, the annual sales of "Meihua Farmhouse Crispy Pork" reached 1.3 billion yuan, ranking first in the industry. ^[2] At the end of 2023, New Hope Group transferred the controlling right of food deep processing business to strategic investors, and completed a major strategic adjustment. From expanding scale to breaking through 10 billion yuan, and then giving up business strategically, this complete business cycle has become a rare typical example to study the cost accounting of large food processing enterprises.

This paper is devoted to this research topic. From the theoretical level, further enrich the research results of food processing enterprises cost accounting, and expand the scope of step-by-step costing and activity-based costing that can be used in this industry. In addition, in practical work, we also hope to teach the experience and lessons that similar enterprises can learn from, and make contributions to improving the overall cost management level of food processing industry in China.

1.2 Current Status of Research at Home and Abroad

The research of cost accounting has a long history. Among foreign scholars, Kaplan and Cooper first put forward the correct basic activity cost (ABC) in the late 1980s. It has fundamentally changed the traditional cost allocation method and changed the focus of enterprise management from products to activities. Therefore, it lays a foundation for the method of obtaining more accurate cost information. Subsequently, value chain cost management, time-driven activity-based costing and other methods came into being, paving the way for cost management in complex production environment.

Domestic scholars have also made remarkable achievements in localization applications. Zhang Ming and Liu Hua introduced activity-based costing into the research field of management accounting in China at an early stage, and systematically sorted out the unique value of activity-based costing in providing decision-useful information compared with traditional costing, laying a theoretical foundation for subsequent research [3]. Zhu Songdong and Ren Zhijie analyzed the realistic prospects of activity-based costing in Chinese enterprises from the perspectives of manufacturing environment, cost calculation, decision-usefulness, organizational control, and cost-effectiveness, and believed that the method is of great significance to improving enterprise cost management [4]. Du Wanghua pointed out that the cost accounting and control requirements of manufacturing enterprises are more advanced and refined than those of commercial or service industries. Establishing a sound cost accounting system and establishing the concept of “big cost” are the key to enterprises’ invincibility in market competition [5]. Zhang Kaidi, through in-depth analysis of manufacturing enterprises, emphasized the need to strengthen the combination of cost accounting and enterprise strategy, and build a cost management system covering the entire process of R&D, procurement, production and sales [6]. Zhang Qiong, starting from the specific issues of cost accounting and control in manufacturing enterprises, put forward a series of suggestions, such as optimizing the accounting process, improving budget management, and strengthening information support [7]. These studies have provided rich theoretical nourishment for the cost management practice of the food processing industry.

However, a review of existing literature reveals a scarcity of specialized research on cost accounting for large agricultural and food groups like New Hope Group. Existing studies on New Hope primarily focus on marketing strategies, product innovation, and capital operations, with a near-complete lack of systematic analysis of its cost accounting system. This research gap forms the starting point for this paper.

2. RELEVANT THEORETICAL FOUNDATIONS

2.1 Basic Concepts and Methods of Cost Accounting

According to the “Enterprise Product Cost Accounting System (Trial)” promulgated by the Ministry of Finance in 2013, product cost refers to the total of material costs, employee salaries and various indirect costs allocated according to certain standards incurred by an enterprise in the production process [8]. The cost items of manufacturing enterprises are usually divided into four parts: direct materials that constitute the product entity, fuel and power directly used in production, direct labor of workers directly involved in production, and manufacturing expenses that serve production but cannot be directly included in the specific product. The sum of the four constitutes the production cost of the product, and its basic accounting formula is: the production cost of the product is equal to the sum of direct materials, direct labor, fuel and power and manufacturing expenses; the cost of finished products in the current period is equal to the beginning work-in-process cost plus the current period production expenses minus the ending work-in-process cost.

The choice of cost accounting method is closely related to the enterprise’s production organization method. The product-based costing method uses product variety as the accounting object, suitable for large-scale, single-step production enterprises, and is relatively simple to operate. The batch costing method uses product batches as the accounting object, fitting the characteristics of order-based, small-batch production. The process costing method aggregates costs according to production steps, particularly suitable for multi-step continuous production industries such as textiles, metallurgy, and meat processing, and is one of the most widely used methods in food processing enterprises. Activity-based costing (ABC) tracks the actual destination of indirect costs from the perspective of activity-based resource consumption and product-based activity consumption, providing more detailed cost information for enterprises with a wide variety of products and complex production processes. In addition, standard costing analyzes discrepancies by setting standards and comparing them with actual costs, and is widely used in large-scale production enterprises with mature technologies. Each of the five methods has its applicable scenarios, as detailed in Table 1.

Table 1. Comparison of Major Cost Accounting Methods

Accounting methods	Accounting objects	Main advantages	Main defects	Typical applications in the food processing industry
Variety method	Product Variety	Simple and easy to do	Limited accuracy	chilled meat cutting
Batch method	Product batch	Reflects the profit and loss of a single batch	Accounting period is not fixed	Central kitchen customized dishes
Step-by-step method	Production steps	Reflecting costs at each stage	The calculation is quite complex.	Meat product and prepared vegetable processing
Activity-based costing	Activity / Cost Drivers	High calculation accuracy	High implementation costs	Multi-variety complex process products
Standard costing	Comparison between standards and reality	Facilitates difference analysis	Standards need to be updated in a timely manner	Standardized products such as ham sausages

2.2 The Special Characteristics of Cost Accounting in the Food Processing Industry

Cost accounting in the food processing industry has its unique characteristics. The most prominent feature is the dominant role of raw material costs. Taking meat processing as an example, main ingredients such as pork and poultry often account for 60% or even 70% of the total product cost. A single fluctuation in raw material prices can significantly alter a company's current profit and loss situation. The second characteristic is the multi-step, continuous nature of the production process. From thawing, cutting, marinating, seasoning, cooking, quick-freezing to packaging and warehousing, a piece of pork undergoes more than ten processes before becoming a small package of crispy pork in the consumer's hand. Each process requires separate cost accounting and calculation of semi-finished product costs.

Many by-products and related commodities bring special difficulties to cost allocation. After a pig passes slaughter line, it will become dozens of products such as carcass meat, offal, bone, skin and blood. How to reasonably divide the common cost between the main product and the by-product directly affects the real profit of each product. Inventory management in shelf-life rules puts forward higher requirements for cost calculation. Shelf life of chilled meat and low-temperature meat products is usually calculated on a daily basis. Unsold inventory will lead to huge inventory losses. The cost of complying with food safety rules is also high. Although the cost of making, protecting and obtaining management systems such as HACCP and ISO22000 does not directly enter the product itself, it is the cost for food companies to survive. Finally, due to the seasonal changes of raw material prices, especially the cyclical price changes of main raw materials such as pork and chicken affected by the "pig cycle", food processing companies must have strong dynamic adjustment ability in cost management. These special features come together to form a special mechanism for cost calculation of food processing industry.

3. OVERVIEW OF NEW HOPE GROUP'S FOOD PROCESSING BUSINESS

3.1 Development History of New Hope Group and its Food Processing Business

The story of New Hope Group began in Xinjin, Sichuan, China in 1982. Si Liu brothers started to breed quails with 1000yuan RMB raised by selling watches and bicycles as capital. After that, the feed industry was cultivated bit by bit and expanded to the upstream and downstream of industrial links. After more than 40 years of hard work, New Hope has become a comprehensive agricultural food group with operations in 15 countries in China and overseas. New Hope Liuhe Co, Ltd. (brand code 000876), a subsidiary of the Group, was listed on the Shenzhen Stock Exchange in 1998, becoming the most important real economic sector in the Group.

Food processing is one of the important tasks of New Hope, which began in 1993 when Meihua Foods was manufactured. At first, the work of this kind of food was mainly to make traditional meat products such as ham sausage and then sell them to the wholesale market. In 2014, New Hope decided the strategic change policy of "from frozen to fresh, from raw to cooked, from transaction to end user", and changed the focus of food processing from simple processing to deep processing and brand operation. Since then, in several major acquisitions, the food sector has been growing: in 2006, it acquired Qianxihe and became the exclusive pork supplier of the 2008 Beijing Olympics. In 2016, it integrated the work

of Jiahe Yipin's central kitchen business. and the acquisition of Shaanxi Benxiang Agriculture for 606 million yuan in 2017.

2021 is an important year for the Ford industry. In August, New Hope acquired 100% shares of Sichuan Baiweiyuan Food Co., Ltd. In September, it was renamed Deyang New Hope Liuhe Food Co., Ltd. The registered capital has gradually increased to RMB 620 million, which has become the central workplace for the merger of 16 Ford companies. By the end of 2023, the company's assets will be about RMB 30 billion and its annual sales will exceed RMB 40 billion ^[9].

On December 15, 2023, New Hope Group announced that it would transfer 67% of the equity of Deyang New Hope Liuhe Food Co., Ltd. to Hainan Shengchen Investment Co., Ltd. for RMB 1.501 billion. This capital operation marks a new stage of development for New Hope's food processing business and provides a natural cyclical dividing point for this paper's core research period of 2020-2023. The company's complete development history can be intuitively presented in Figure 1.

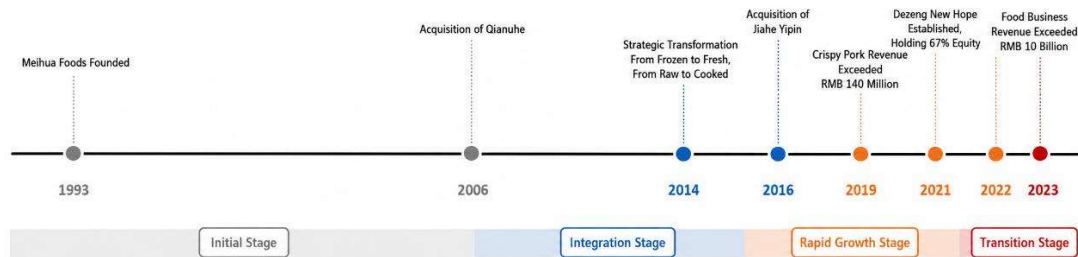


Figure 1. Development History of New Hope Group's Food Processing Business

3.2 Food Processing Business Organizational Structure and Main Products

During the research period, New Hope Foods' processing business formed an organizational structure with Deyang New Hope Liuhe Foods Co., Ltd. at its core and multiple brands developing collaboratively. Meihao Foods focuses on deep-processed meat products and ready-to-eat meals, and is the strongest brand in terms of influence; Qianxihe undertakes functions such as pig slaughtering, chilled pork, and processed food production, providing stable raw materials for downstream products; Jiahe Yipin serves as a central kitchen, undertaking the research and development and production of ready-to-eat meal products; Yangling Benxiang Foods focuses on the high-end meat product market in Shaanxi Province; Liuhe Meishi mainly focuses on deep processing of poultry; and "Yushanfang," launched in 2022, undertakes the brand exploration task of ready-to-eat meals for C-end families. See Table 3-1 for the specific brand business matrix.

In terms of production base layout, Meihao Foods alone has fourteen core factories in provinces and cities such as Sichuan, Anhui, Shandong, Beijing, Liaoning, and Shaanxi, six of which specialize in producing crispy pork, forming a nationwide production network. Regarding the sales network, it achieves 100% coverage of the Top 100 Sichuan-style hot pot chain brands, partners with over 60,000 catering outlets, and boasts 100% coverage of provincial capital cities and over 60% coverage of prefecture-level cities for its distributors, building a dual sales system covering both B-end catering and C-end retail.

Table 2 New Hope Food Processing's Major Brand Business Matrix

brand	Establishment / Acquisition Time	Main business	Core Products
Meihao Foods	1993	Deep-processed meat products, pre-cooked vegetables	Delicious Crispy Pork, Ham Sausage, and Pork Intestine
Thousand Cranes	Acquired in 2006	Pig slaughter, chilled meat, prepared products	chilled pork, processed meat products
Jiahe Yipin	Acquired in 2016	Central kitchen, pre-made food	Chinese pre-made dishes

Table 2. (continued) New Hope Food Processing's Major Brand Business Matrix

brand	Establishment / Acquisition Time	Main business	Core Products
Yangling Original Fragrance	Acquired in 2017	High-end meat products	premium ham sausage
Liuhe Cuisine	—	Poultry deep processing	Poultry prepared products
Pre-cooking Workshop	2022	Homemade meals	Home-style dishes, high-end cuisine

3.3 Operational Status of Food Processing Business from 2020 to 2023

From the perspective of operating data, these four years have been the golden period of rapid development of New Hope's food processing business. The sales volume of deep-processed meat products and pre-cooked vegetables increased from 205,000 tons in 2020 to 268,700 tons in 2023, with a cumulative growth of more than 30%; operating income jumped from RMB 3.85 billion to RMB 4.614 billion. If the complete caliber of food business including slaughtering is adopted, the revenue in 2022 exceeded RMB 10 billion for the first time, reaching RMB 10.851 billion, and further increased to RMB 11.672 billion in 2023 ^[2]. For specific data, please refer to Table 3, and the overall trend is shown in Figure 2.

Table 3. Revenue and Sales Volume of New Hope Food Deep Processing Business (2020-2023)

years	Sales volume (10,000 tons)	Revenue from deep food processing (in 100 million yuan)	Year-on-year (%)	Revenue from food business including slaughtering (in RMB 100 million)
2020	20.5	38.5	—	95.6
2021	22.3	41.8	8.57	99.1
2022	25.35	41.92	0.29	108.51
2023	26.87	46.14	10.05	116.72

Data source: Annual Reports of New Hope Liuhe Co., Ltd., 2020-2023

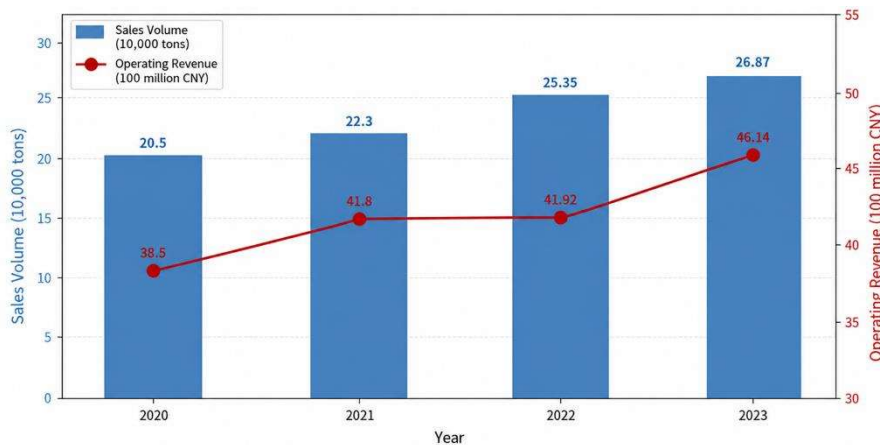


Figure 2. Revenue and Sales Volume Trends of New Hope Food Processing Business (2020-2023)

What truly amazed the market was the growth trajectory of the phenomenal single product, “Meihao Farmhouse Crispy Pork”. In 2019, the annual sales of this product were only 140 million yuan, but by 2020 it had soared to 600 million yuan, broke through the 1 billion yuan mark in 2021, and reached 1.3 billion yuan in 2023, firmly ranking first in the category market ^[2]. Six to seven out of ten of the sales channels for this single product came from Sichuan and Chongqing hot pot restaurants, and Meihao Foods has achieved 100% coverage of the Top 100 Sichuan hot pot chain brands. The growth

curve of crispy pork is shown in Figure 3, with a growth rate of 328.6% from 2019 to 2020, demonstrating extremely strong market explosive power.

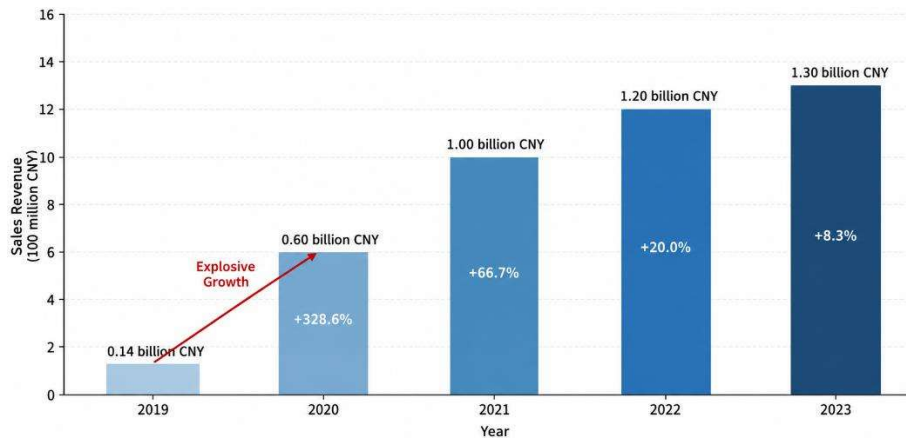


Figure 3. Sales growth curve of Meihua Farmhouse Crispy Pork (2019-2023)

4. ANALYSIS OF THE CURRENT STATUS OF COST ACCOUNTING IN NEW HOPE GROUP'S FOOD PROCESSING BUSINESS

4.1 Selection of Cost Accounting Methods and Accounting Objects

New Hope Foods' production organization is characterized by "multiple varieties, multiple steps, and large batches." Faced with such a business model, a single accounting method is clearly insufficient to meet management needs. Therefore, in practice, the company has developed an accounting structure that primarily uses a step-by-step approach, supplemented by multiple other methods.

The pig slaughtering process involves continuous steps and numerous associated products, making a step-by-step cost allocation method suitable, with by-products deducted from the cost of the main product based on their net realizable value. Fresh meat cutting is a single-step, large-scale production process, where the product-based costing method is more economical and practical. Deep-processed meat products such as ham sausage and crispy pork must use the step-by-step cost allocation method. Increase the cost of each process in sequence and enter the next process. The customized order processed in Jiahe Yipin's central kitchen requires batch-based costing method. In this way, we can correctly play the real benefits of each order. This combination of "strategy for various industries" shows that the company has fully considered the balance between the correctness of accounting and the cost of implementation. Where it can be used is written on Table 4.

Table 4. Applicability of Cost Accounting Methods for New Hope Food Processing Business Segments

Business segments	Production characteristics	Accounting methods	Accounting objects
pig slaughter	Single product category, multiple processes, and multiple related products	Step-by-step method + joint product allocation	Slaughter batch × Product category
chilled meat cutting	Single-step, high-volume	Variety method	Product Variety
High-temperature meat products	Multi-step, high-volume, standardized	Step-by-step costing method + standard costing method	Product Variety × Production Steps
Pre-made dishes / crispy pork	Multiple ingredients, multiple processes, complex	Step-by-step method + Activity-based costing	Product type × Workshop × Process
Central kitchen dishes	Multiple varieties, small batches, customization	Batch method	Order batch

According to Article 9 of the Enterprise Product Cost Accounting System (Trial), enterprises that perform multi-step continuous processing should determine the cost accounting objects according to product varieties and each production step^[8]. New Hope basically followed the normative requirements in this regard, but due to historical habits and the level of informatization, some subsidiaries still have the phenomenon of accounting by workshop rather than by product variety, which to some extent affects the decision relevance of cost data.

4.2 Analysis of the Cost Composition of Major Products – Taking “Meihao Crispy Pork” as an Example

Crispy Pork Belly is the best example for analyzing the cost structure of New Hope Foods’ processing. This product is made from an ordinary piece of pork hind leg and transformed into a delicious dish through complex processes. Its cost structure fully reflects the typical characteristics of the food processing industry.

From a technological perspective, the production of a package of crispy pork involves more than ten steps, including raw material procurement, thawing, cutting and trimming, marinating, coating with batter (egg liquid and flour mixture), frying, cooling, quick-freezing, packaging, metal detection, cold chain warehousing, and distribution. Each step incurs costs of different natures—some are direct material inputs (such as pork, flour, egg liquid, and cooking oil), some are direct labor costs (such as wages for cutting and packaging workers), and some are the amortization of manufacturing expenses (such as workshop depreciation, water and electricity, and refrigeration energy consumption). The correspondence between each step and cost elements can be visually illustrated in Figure 4.

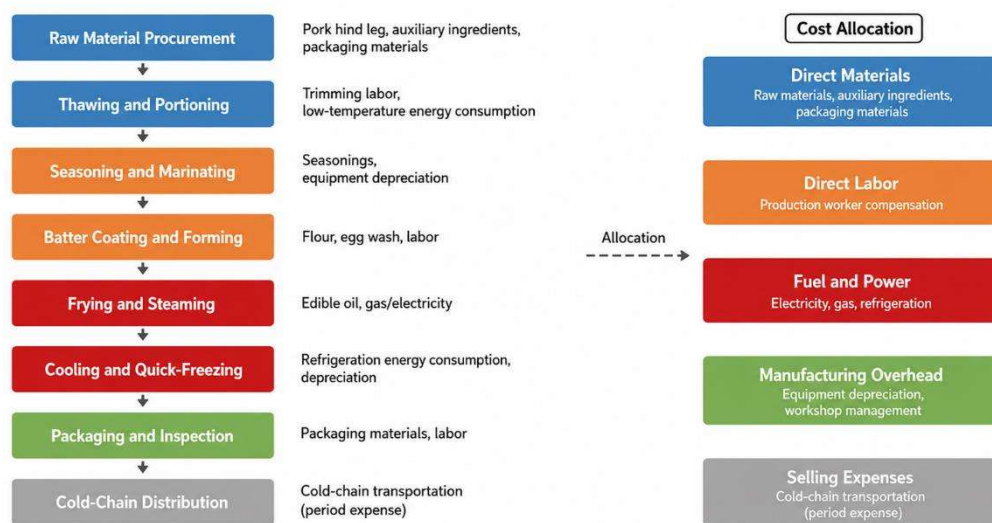


Figure 4. Schematic diagram of the production process and cost allocation of crispy pork

According to the general industry proportion, the cost composition of 1 ton of Meihao Crispy Pork is roughly as follows: the main ingredient pork and peach meat accounts for 55% of the total cost, which is the biggest cost seen by anyone. Seasonings such as flour, egg liquid and Hanyuan peppercorns account for 9%. Cooking oil accounts for 6% and packaging material accounts for 5%. Direct materials alone account for three-quarters of the overall cost. Direct labor costs account for about 8%, light and heat costs such as electricity and gas account for about 5%, equipment depreciation costs account for about 5%, and remaining costs such as factory management and quality management account for about 7%. The detailed configuration is shown in Table 5, and Figure 500 shows the configuration intuitively in the form of nested pie charts.

Table 5. Estimated Cost Structure of Delicious Crispy Pork (RMB /ton)

Cost items	Amount (RMB /ton)	Percentage (%)
Pork hind leg meat (direct ingredient)	22000	55.0
Flour, egg liquid, seasonings	3600	9.0
cooking oil	2400	6.0
Packaging materials	2000	5.0
Total direct materials	30000	75.0
direct labor	3200	8.0
fuel power	2000	5.0
Equipment depreciation	2000	5.0
Workshop management expenses	1200	3.0
Quality control costs	800	2.0
Other manufacturing costs	800	2.0
total	40000	100.0

Note: The above data is an estimate based on typical industry structures. Actual data is subject to company disclosures.

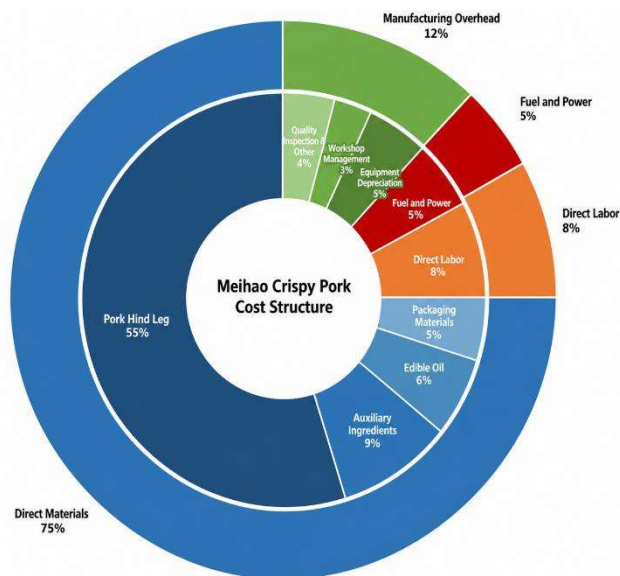


Figure 5. Cost Structure of Delicious Crispy Pork (Inner ring represents sub-items, outer ring represents major categories)

This cost structure reveals an important fact: the cost of crispy pork depends on the raw materials, and every fluctuation in pork prices will profoundly affect the product's profit margin. This also explains why New Hope insists on the whole industrial chain model of "raw grain - feed - breeding - slaughtering - processing" - through upstream and downstream collaboration, to hedge against the risk of raw material price fluctuations to the greatest extent. In 2022, the company's slaughtering sector exceeded 2.91 million heads, and the overall internal procurement rate reached more than 60% [2]. This means that a considerable proportion of the pork raw materials required for crispy pork come from the group's internal supply, thus gaining a significant advantage in procurement costs.

It is worth mentioning that the research and development process of the crispy pork is also full of ingenuity. Meihao Foods tried 34 different pork ingredients, revised the egg liquid for coating the meat 28 times, and optimized the batter ratio, oil temperature and frying time through nearly 300 consumer taste tests [10]. Although these R&D investments are not directly

included in the current product cost, they constitute the basis of the product's "hidden cost" and are also the fundamental guarantee for the realization of brand premium.

4.3 Cost Accounting Process and Accounting Treatment

The cost accounting process for New Hope Foods' processing business follows the standard path of "procurement - material requisition - processing - warehousing - sales". There are clear accounting treatment standards at each stage. The overall process is shown in Figure 6.



Figure 6. Flowchart of New Hope Food Processing Business Cost Accounting

When raw materials are purchased and put into storage, they are valued using either the weighted average method or the first-in, first-out (FIFO) method. The weighted average method, due to its simplicity and balance, has become the dominant inventory valuation method for New Hope Foods' business. The weighted average unit price equals the sum of the beginning inventory cost and the current period's revenue inventory cost divided by the sum of the beginning quantity and the current period's revenue quantity. Production material requisitions are executed according to the Bill of Materials (BOM). The workshop retrieves raw materials from the warehouse based on the requisition slip, and the accounting department transfers the raw material cost to the production cost account accordingly. Labor wages are recorded in production costs and manufacturing overhead separately for those directly involved in production and workshop management personnel. Manufacturing overhead is collected at the end of the month and allocated to each cost accounting object according to a reasonable allocation standard (usually machine hours or direct labor hours). After finished products are inspected and put into storage, the cost is transferred from the production cost account to the inventory account; when sales are realized, the corresponding quantity of inventory cost is transferred to the cost of goods sold.

The collaboration of the entire industry chain is a major highlight of New Hope's cost accounting process. There are a lot of internal transactions between feed, breeding, slaughtering and processing. The transfer pricing of these transactions must not only comply with the principle of independent transactions, but also take into account the needs of internal management assessment. In practice, the company adopts the market price method supplemented by appropriate adjustments, which not only ensures the independent accounting of each business unit, but also avoids internal price distortion of business decisions. In the first half of 2023, the centralized procurement rate of the company's feed business

headquarters reached more than 75%, and further increased to 80% in the second quarter. The average production cost per ton decreased by 4% year-on-year, and the feed formula cost was optimized by RMB 18/ton ^[11] - behind these data is the strong support of a refined cost accounting system.

5. PROBLEMS IN THE COST ACCOUNTING OF NEW HOPE GROUP'S FOOD PROCESSING BUSINESS

5.1 The Cost Accounting System Is Not Precise Enough.

Although New Hope has demonstrated a “tailored approach” in its choice of cost accounting methods, there is still room for improvement in the sophistication of its accounting system in practice.

The application depth of the accounting method is not deep enough. Although the step-by-step method is the dominant method, it still seems inadequate when facing complex products such as crispy pork with many ingredients and processes. The production of crispy pork involves more than six processes, including raw material processing, marinating, coating, frying, quick freezing, and packaging. Each process may also use different seasonings and auxiliary materials. Using the traditional step-by-step method to transfer the cost of semi-finished products layer by layer according to the process can easily cover up the differentiated consumption of manufacturing resources between different products. The more suitable activity-based costing method has not yet been widely implemented in the food sector, which reduces the decision relevance of cost information ^[5].

The granularity of the accounting objects is too coarse. Some subsidiaries are accustomed to accumulating costs by workshop rather than by product type. This practice is not a big problem in a single-product workshop, but once a workshop produces multiple products, the allocation of common costs becomes arbitrary. For example, in a workshop that produces both crispy pork and pork intestines, if all manufacturing costs are simply allocated according to the proportion of output, the different consumption intensities of equipment, energy, and labor for the two products will be ignored, resulting in the overestimation of the cost of one product and the underestimation of the cost of the other product ^[6].

The allocation standards for indirect costs are becoming increasingly simplistic. Manufacturing overhead is mostly allocated based on direct labor hours or direct material costs—a standard practice in traditional cost accounting. However, the structure of manufacturing costs in the food processing industry is undergoing subtle changes. With the widespread use of automated equipment, the proportion of equipment depreciation and energy costs is increasing, while the proportion of labor costs is decreasing. Continuing to use an allocation standard primarily based on labor hours will distort the true cost of the product. In the quick-freezing process of crispy pork, equipment depreciation and electricity costs are the real major costs; allocating them based on labor hours would clearly be unfair.

5.2 Cost Management and Information Technology Levels Need to Be Improved.

Cost accounting is not an isolated technical activity; it is closely related to a series of management mechanisms such as budget management, performance evaluation, and information systems. Examining these mechanisms reveals several shortcomings in New Hope Foods' cost management system.

The standard cost system is not yet perfect. Standard cost is the starting point of cost control and the basis of variance analysis. Although New Hope has established relatively mature cost benchmarks in the feed and breeding sectors (such as the target of RMB 14/kg for the total cost of live pigs), in the food processing sector, the similar target cost decomposition and dynamic update mechanism is not yet sound. Once the standard cost lags behind market changes, the variance analysis loses its reference value ^[7].

Cost responsibility is not clearly defined. Ideal cost management should achieve “targets for everyone,” but in reality, the responsibilities of each production link in food processing are not clearly defined, and the mechanism linking cost savings to employee performance is still relatively loose. When frontline workers do not know how much saving a kilowatt-hour of electricity or a drop of oil affects their bonuses, lean production can only remain a slogan.

Information systems urgently need upgrading. In 2021, New Hope Group partnered with Lark to launch the “Leap Forward Plan,” marking a significant step in digital transformation at the level of office collaboration. However, the coverage depth of the ERP system and MES manufacturing execution system dedicated to cost accounting in the food sector remains limited. Cost data from various factories, workshops, and processes is difficult to collect in real time, and the monthly cost accounting performed by the finance department still has a heavy “post-event processing” character, restricting the early warning and dynamic adjustment capabilities of cost management.

5.3 Insufficient Disclosure of Segment Cost Information

This issue was dramatically confirmed in the business divestiture at the end of 2023.

On December 15, 2023, New Hope announced two major transactions on the same day: transferring 51% of the equity of Shandong Zhongxin Food, the main body of white-feathered poultry business, to China Animal Husbandry Industry and Commerce Group for RMB2.7 billion, and transferring 67% of the equity of Deyang New Hope, the main body of food deep processing business, to Hainan Shengchen Investment for RMB1.501 billion. These two transactions brought the company an investment income of RMB5.198 billion, directly pulling New Hope's net profit attributable to the parent company in 2023 from a potential huge loss back to a positive value of RMB249 million - if this non-recurring gain or loss is excluded, the company's net profit after deducting non-recurring gains and losses is actually -RMB4.608 billion^[12]. This dramatic change can be intuitively presented by Figure 7.

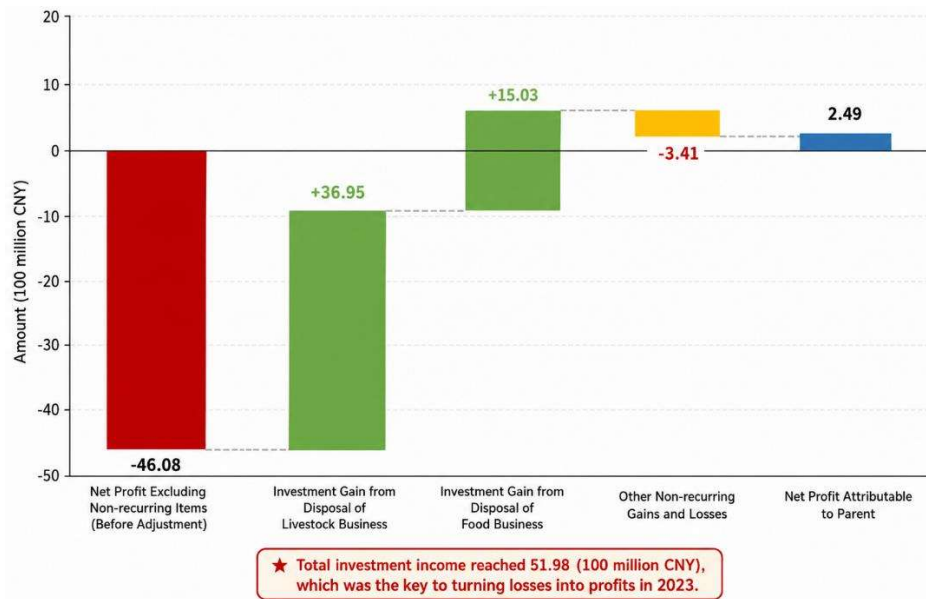


Figure 7. Impact of New Hope's business divestiture on profits in 2023 (waterfall chart)

This incident illustrates a problem that existed a long time ago. Food processing business expense data is only roughly disclosed in the consolidated financial statements of the group. Therefore, it is difficult for investors outside to know exactly how much this business can make independently and what the real asset value is. According to the annual report, in 2023, Ford's business income was 4.614 billion yuan and its sales were 268,700 tons. However, detailed information such as the cost structure of each product line, the distribution of gross profit ratio and the reasons for the increase in major expenses were not disclosed. Because the information is so different, it will prevent investors from making correct judgments. The possibility of making detailed decisions in management will also be reduced.

Further consideration, the insufficient disclosure of business division information also affected the strategic decision of management. If the company has a clear expense database in terms of product, brand and business division, the strategic decision of business sale in 2023 may be faster and more sure. There is no need to wait until the career losses have accumulated to a certain extent before acting. This can also arouse the attention of all large groups engaged in various undertakings. If there is no clear cost of each business category, it is impossible to evaluate the clear business value.

6. COST ACCOUNTING OPTIMIZATION STRATEGIES FOR NEW HOPE GROUP'S FOOD PROCESSING BUSINESS

6.1 Constructing A Diversified Cost Accounting Methodology System

In order to solve the problem that the existing accounting methods are not accurate enough, New Hope Food Processing has got rid of the inertia of "one-size-fits-all" and combined them according to the characteristics of different products, including "product-based costing, process-based costing, activity-based costing and standard costing". The method of

catch-up stage is still the center of meat processing, but it needs to be optimized and improved. The object of cost accounting is not the workshop of the factory, but is determined according to each stage of the operation, and each stage is regarded as the point of collecting independent costs. It is very important to calculate the cost of semi-finished products strictly for realizing the state of “you can clearly see the cost of each stage”. Based on the method of moving cost step by step, the method of moving cost in parallel is also used in important work stages, which is convenient for analyzing cost from all angles.

Activity-based costing (ABC) should be the primary focus for pre-prepared meals and complex products. Products with multiple ingredients, processes, and equipment intensity, such as crispy pork, pork intestines, and pre-prepared meal series, are best suited for ABC. In specific implementation, the following activity divisions can be considered: raw material processing, marinating and seasoning, shaping and processing, frying and cooking, quick-freezing and packaging, and quality inspection. For each activity, appropriate cost drivers should be identified (such as labor hours, machine hours, batch number, number of inspections, etc.), upgrading indirect costs from “allocation based on experience” to “allocation based on consumption.” For companies facing significant implementation challenges, a simplified version of time-driven ABC can be used first, using time as the unified cost driver to lower the implementation threshold. The two-stage allocation model of ABC is shown in Figure 8.

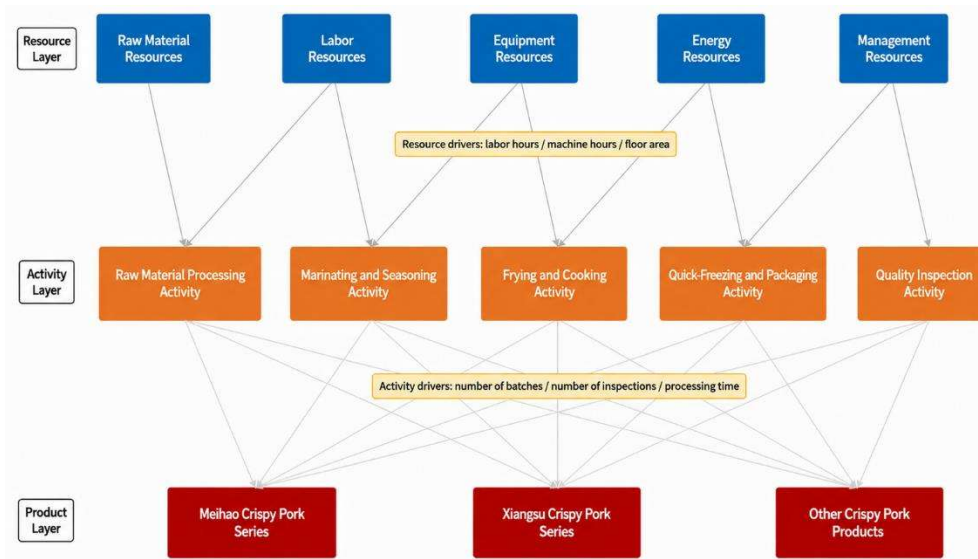


Figure 8. Two-stage allocation model of activity-based costing in the production of crispy pork.

Standard costing should be applied more extensively to mature products. For products like Meihao ham sausages, which have highly standardized processes, a strict standard costing system should be established. A monthly analysis table of the difference between standard cost and actual cost should be prepared, and the differences should be subdivided into three categories: price difference, quantity difference, and efficiency difference, to provide precise targets for improvement.

6.2 Improve the Cost Budgeting and Accountability Mechanism

Method optimization is only a technical aspect; what truly enables cost management to be implemented is the accompanying budget and accountability mechanisms.

Establish a dynamically updated standard cost system. New Hope must make a detailed breakdown of standard costs for each major product. The table will be filled with important indicators such as standard material consumption, standard working hours, and standard manufacturing indirect cost allocation rate. The table is updated every three months or one month to adapt to the market situation, the improvement of working procedures and the update of equipment. Taking crispy pork as an example, the standard cost is dynamically adjusted according to the changes of pork price, vegetable oil price and packaging material price to avoid the rigid practice of “constant throughout the year”.

Implement the cost responsibility center system. According to the functional characteristics of each business unit, the enterprise is divided into profit centers (such as the Meihua Food Division), cost centers (such as specific production

workshops) and investment centers (such as the headquarters of Deyang New Hope Liuhe Food Co., Ltd.). Each center has clear cost control targets and assessment indicators, and these indicators are directly linked to the performance-based salary of the person in charge. The bonuses of front-line workers are linked to the cost saving rate of their work groups, and the year-end evaluation of workshop directors is linked to the completion of the workshop cost budget, thereby transmitting the pressure and motivation of cost management to every position ^[7].

Strengthen cost variance analysis and improvement loops. When actual costs deviate from standard costs, we should not stop at simple numerical differences, but delve into the reasons behind them: Is it due to rising raw material procurement prices? Is it due to aging equipment leading to decreased efficiency? Is it due to losses caused by process changes? Each variance should correspond to an improvement action item with a clear responsible person and timeline. Only by forming a complete closed loop of “identifying variances—analyzing causes —developing countermeasures—implementing improvements—verifying results” can cost management truly generate benefits.

The “three concessions” policy of Meihua Foods Deyang Factory is worth promoting throughout the group. When cost and quality conflict, cost makes way for quality; when system and process conflict, process makes way for quality; when development speed and quality control cannot be achieved, speed makes way for quality ^[8] — This is not only a corporate culture slogan, but also a practical guide to maintaining the bottom line of product quality under cost pressure, reflecting the underlying philosophy of food companies that “take quality as the foundation”.

6.3 Promote the Digital Transformation of Cost Management

If methods and mechanisms are the “software” of cost management, then information systems are its “hardware.” In the era of digital economy, cost management without the help of information technology will reduce efficiency.

Build a unified cost management platform including ERP, MES and PLM. ERP system is the data summary work of the whole process of financial accounting, procurement, inventory and sales, and it can use mainstream products such as SAP S/4HANA and Kingdee Cloud Starry Sky. MES manufacturing execution system is directly connected with the production site, collecting real-time data of raw material consumption, labor time and energy consumption of each batch of processes, and changing the cost data from “monthly summary” to “real-time understanding”. PLM product life cycle management system runs through the whole process of R&D, production and sales, helping enterprises to track the whole cost process of each product from the start of the project to the stop of sales. The overall structure is shown in Figure 9.

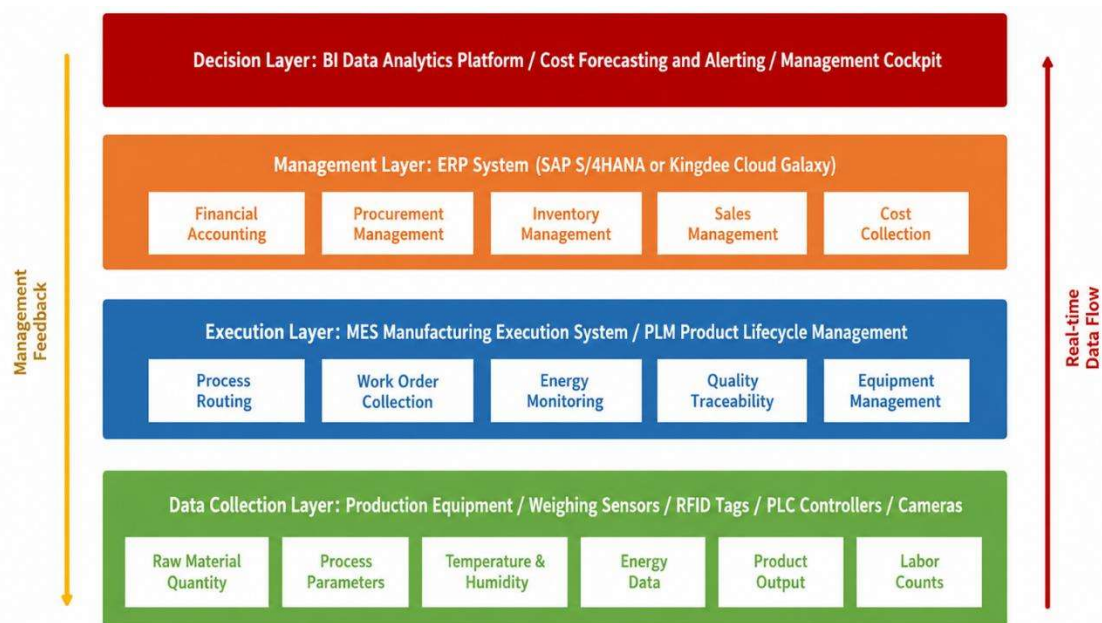


Figure 9. Digital Cost Management Architecture for New Hope Food Processing Business

AI can be used to predict and warn of costs. Based on sufficient historical data accumulation, machine learning algorithms can be used to build cost prediction models to predict future raw material price trends, equipment failure risks, product sales trends, etc., and push cost management from “post-event reflection” to “pre-event warning”. New Hope has launched the AI assistant “Zhu Xiaoxin” in the pig farming sector ^[13], and similar tools can be fully implemented and promoted in the food processing sector.

The entire industry chain, from raw grain to feed, breeding, slaughter and processing, is New Hope’s strongest competitiveness. However, this power is still not fully used. If we break down the data walls at each stage and let data cooperate end-to-end in feed formulation, pig quality, slaughter processing and meat product processing, we can improve the cost structure on a larger scale. For example, if the supply of pork in different parts of the slaughter stage is matched in real time with the food processing stage, the Crispy Pork workshop can dynamically change production plans to match the supply of raw materials, avoiding the extra costs of having too much or too little raw material in stock.

Improve the disclosure of segment cost information. Drawing on the practices of listed companies such as Shuanghui Development, the annual report should provide detailed disclosures of revenue, costs, gross profit margins, and key cost drivers by business segment and product category. Transparent information disclosure is not only a compliance requirement but also the foundation for the market to accurately price a company’s value. When investors can clearly see the profitability of each product line in the food business, the valuation premium the company receives often exceeds the cost of disclosing the information itself.

7. CONCLUSION AND OUTLOOK

7.1 Research Conclusions

Using 2020 to 2023 as the research period, after systematically analyzing the current status of cost accounting in New Hope Group’s food processing business, the following conclusions can be drawn.

While rapidly expanding its food processing business, New Hope Group has initially established a cost accounting system based on a step-by-step approach supplemented by multiple methods, which can basically meet the needs of the company’s daily operations and management. The full-industry chain collaborative model, the large customer centralized procurement strategy, and the “three concessions” quality policy of the Deyang plant of Meihua Foods are all commendable highlights in its cost management practices. The achievements of exceeding 10 billion yuan in food business revenue for the first time in 2022 and exceeding 1.3 billion yuan in sales of its crispy pork product in 2023 are inseparable from the strong support of cost management.

However, there are still some problems that cannot be ignored in the cost accounting system. The fineness of accounting methods needs to be better. activity-based costing (ABC) has not been widely used in complex products. The accounting object is not detailed enough, and some subsidiaries calculate the cost according to the workplace rather than the product type. This will not work for decision-making. The allocation rules of indirect cost are too simple, and it is difficult to express the real cost structure in automated production sites. The standard cost system is not perfect, and the cost responsibility mechanism needs to be further strengthened. The informatization level of cost also has a lot of room to do better. The disclosure of the department’s cost information is not detailed enough, and the problem can be clearly seen in the business divestiture event in 2023.

In order to solve this problem, this paper puts forward three improvement methods. The first is to establish a system that includes various accounting methods of “product-based costing+process-based costing+activity-based costing+standard costing”, especially in complex products, and is committed to introducing basic activity costs. The second is to do a good job in the work standard cost system and cost responsibility center system. This will convey the pressure of cost management to all departments. Thirdly, digital transformation is carried out on the basis of unified ERP-MES-PLM platform. Use AI for cost forecasting and early warning, and deepen the data cooperation of the whole industry chain. These methods can be used not only for the processing of New Hope Foods, but also for other large food processing enterprises.

7.2 Research Prospects

At the end of 2023, New Hope Group absorbed strategic investors and transferred the controlling stake in the food processing department. At this point, the development of this cause has entered a new stage. Deyang New Hope Liuhe Food Co, Ltd. still acts as a central entity, and only the controlling shareholder has changed. The impact of the change of

the stock on the company's cost calculation system, operating mechanism and information disclosure is a subject worthy of further investigation in the future. On the other hand, the favorable policies of cooked food industry, the improvement of consumers' health awareness and the progress of intelligent manufacturing technology are constantly changing the cost structure of food processing industry. Future cost accounting research needs to pay more attention to new cost elements such as food safety cost, green low-carbon cost and R&D innovation cost, and formulate new cost management methods suitable for today's era.

Due to the lack of time and available data, this study also has limitations. Some cost structure data are calculated according to the general proportion of industries, which may be different from the actual data of the company. Moreover, because there is little information that can be used publicly, the detailed analysis of the internal management of New Hope Foods processing business is not very in-depth. These shortcomings need to be further expanded and improved in the future research using more abundant data.

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